

CLAIMS

The invention is claimed as follows:

1. An anode, comprising:
 - an anode current collector having a projection; and
 - 5 an anode active material layer being disposed on the anode current collector, and being alloyed with the anode current collector in at least a portion of an interface with the anode current collector, and including at least one kind selected from the group consisting of silicon and silicon compounds.
- 10 2. An anode, comprising:
 - an anode current collector having a projection; and
 - an anode active material layer being formed on the anode current collector through at least one method selected from the group consisting of a vapor deposition method, a liquid-phase deposition method and a sintering method, and including at
 - 15 least one material selected from the group consisting of silicon (Si) and silicon compounds.
3. The anode according to claim 2, wherein
 - the anode active material layer is alloyed with the anode current collector in at
 - 20 least a portion of an interface with the anode current collector.
4. The anode according to claim 2, wherein
 - the anode current collector is formed through forming a projection in a particle shape on a substrate.
- 25 5. The anode according to claim 4, wherein
 - an average diameter of the projection ranges from about 1 μm to about 20 μm .
6. The anode according to claim 2, wherein
 - 30 the projection includes an element capable of being alloyed with the anode active material layer.

7. The anode according to claim 2, wherein
the projection includes at least one constituent selected from the group consisting of copper (Cu), nickel (Ni), iron (Fe), aluminum (Al), indium (In), cobalt (Co), manganese (Mn), zinc (Zn), silver (Ag), tin (Sn), germanium (Ge) and lead (Pb).

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8. The anode according to claim 2, wherein
the anode active material layer is alloyed with the projection in at least a portion of an interface with the projection.

10 9. A battery, comprising:

a cathode;
an anode; and
an electrolyte,

wherein the anode includes an anode current collector having a projection, and
15 an anode active material being disposed on the anode current collector, and being alloyed with the anode current collector in at least a portion of an interface with the anode current collector, and including at least one kind selected from the group consisting of silicon (Si) and silicon compounds.

20 10. A battery, comprising:

a cathode;
an anode; and
an electrolyte,

wherein the anode includes an anode current collector having a projection, and
25 an anode active material layer being formed on the anode current collector through at least one method selected from the group consisting of a vapor deposition method, a liquid-phase deposition method and a sintering method, and including at least one type of material selected from the group consisting of silicon (Si) and silicon compounds.

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11. The battery according to claim 10, wherein
the anode active material layer is alloyed with the anode current collector in at
least one portion of an interface with the anode current collector.

5 12. The battery according to claim 10, wherein
the anode current collector is formed through forming a projection in a particle
shape on a substrate.

10 13. The battery according to claim 12, wherein
the average diameter of the projection ranges from about 1 μm to about 20 μm .

14. The battery according to claim 10, wherein
the projection includes an element capable of being alloyed with the anode
active material layer.

15 15. The battery according to claim 10, wherein
the projection includes at least one constituent selected from the group
consisting of copper (Cu), nickel (Ni), iron (Fe), aluminum (Al), indium (In), cobalt
(Co), manganese (Mn), zinc (Zn), silver (Ag), tin (Sn), germanium (Ge) and lead (Pb).

20 16. The battery according to claim 10, wherein
the anode active material layer is alloyed with the projection in at least a
portion of an interface with the projection.

25 17. The battery according to claim 10, wherein
the electrolyte includes a retaining body, a solvent and an electrolyte salt.

18. The battery according to claim 10, further comprising:
a film-shaped package part for containing the cathode, the anode and the
30 electrolyte therein.

19. The battery according to claim 10, wherein
the cathode includes a lithium-containing metal composite oxide.